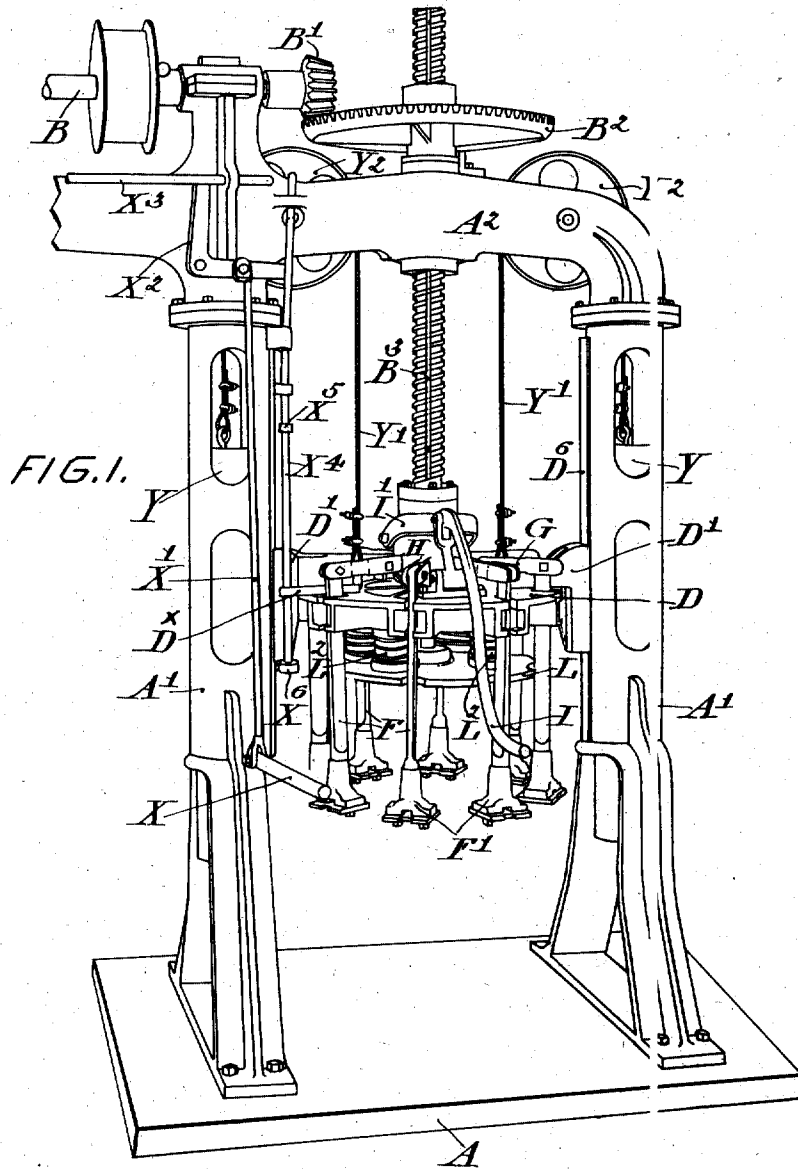


W. C. STEVENS & A. MACGREGOR.
 BARREL HOOP DRIVING MACHINE.
 APPLICATION FILED SEPT. 22, 1909.

1,008,570.

Patented Nov. 14, 1911.

2 SHEETS—SHEET 1.



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SHEETS—SHEET 2.

FIG. 2.

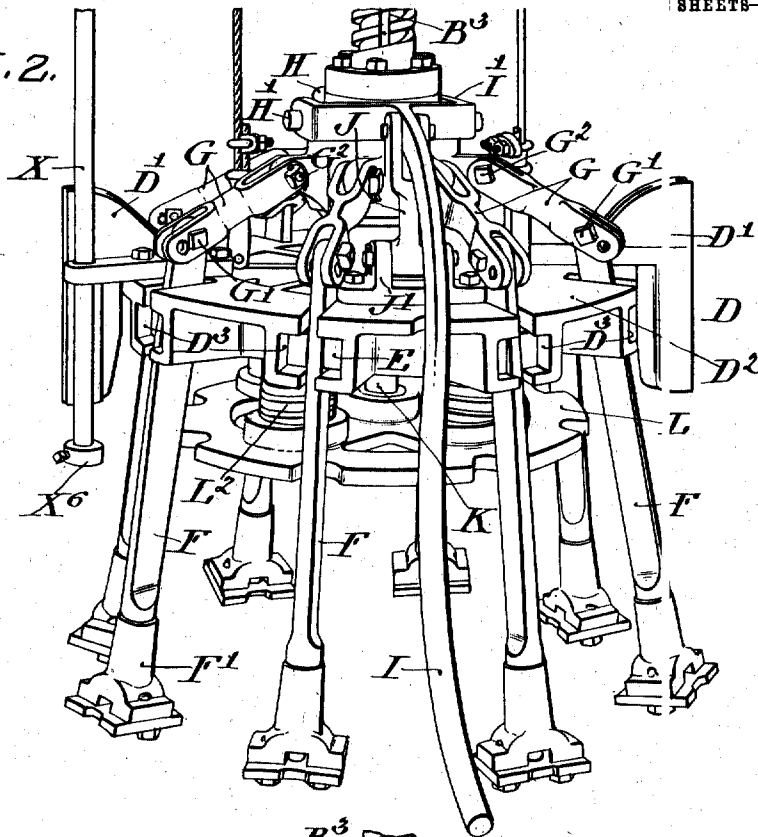
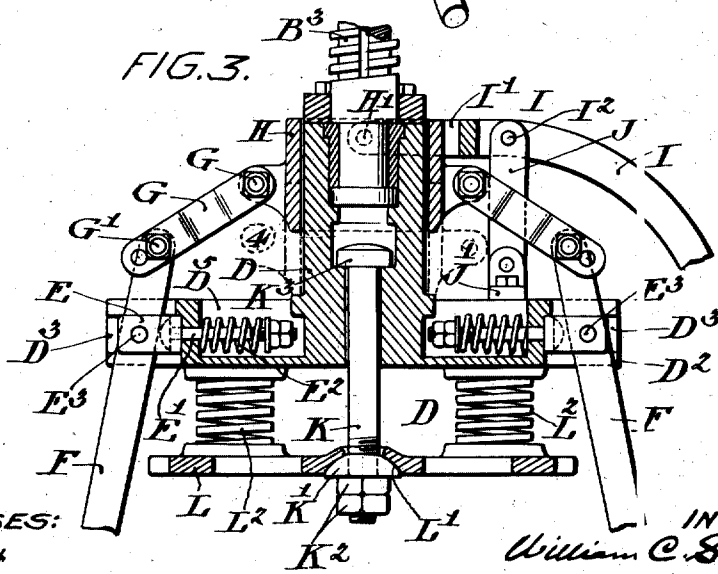


FIG. 3.



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BARREL-HOOP-DRIVING MACHINE.

1,008,570.

Specification of Letters Patent. Patented Nov. 14, 1911.

Application filed September 22, 1909. Serial No. 519,004.

To all whom it may concern:

Be it known that we, WILLIAM C. STEVENS, of Akron, in the county of Summit and State of Ohio, and ALEXANDER MACGREGOR, of Pittsburgh, in the county of Allegheny and State of Pennsylvania, both citizens of the United States of America, have invented a certain new and useful Improvement in Barrel-Hoop-Driving Machines, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

Our present invention relates to machines for driving or setting hoops on barrels, casks and the like.

The object of the invention is the provision of a driving head construction which is simple, reliable and powerful in operation, is not apt to get out of order, can be easily adjusted to barrels of different sizes, and has provisions for readily and positively moving the driving arms radially outward when necessary before and after driving one of the intermediate hoops on the barrel so that the driving arms will clear the end hoop or hoops of the barrel, while at the same time each driving arm has freedom to accommodate itself to any irregularity in the contour of the barrel during the hoop driving operation, but is held against jumping over the hoop being driven.

A further object of the invention is the provision in a driving head having driving arms for setting the intermediate hoops of a barrel, of a suitable resiliently supported presser plate for engaging the end hoop of the barrel and driving it in place either at the same time that the intermediate hoop is being set, or at a different time.

The various features of novelty which characterize our invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, however, reference should be had to the accompanying drawings and descriptive matter in which we have illustrated and described in detail one of the forms in which the invention may be embodied.

Of the drawings, Figure 1 is a perspective view showing an entire hoop setting machine except a portion of the driving mechanism of the machine. Fig. 2 is a perspective view, on a larger scale than Fig. 1,

showing the driving head, and Fig. 3 is a sectional elevation of the driving head.

In the drawings, A represents the base of the machine on which the barrel, cask, or the like, (not shown), on which a hoop or hoops is to be driven, is placed. On the base A are supported a pair of pedestals or columns A' which are united at the top by a cross piece A². The driving head, indicated as a whole by the symbol D, is provided with guides D' sliding on vertical guide ways or ribs D⁶ carried by the columns A'. The driving head is raised or lowered by means of a screw shaft B³ secured at its lower end to the driving head, and longitudinally movable through, but held against rotation in, the cross piece A². An internally threaded gear B² is journaled in, but held against axial movement in, the cross piece A² and serves when rotated to raise and lower the threaded shaft B³. The gear B² is provided with beveled gear teeth meshing with beveled gear B' carried by the driving shaft B. It will be understood that suitable provisions are made for rotating the shaft B' in one direction or the other accordingly as it is desired to raise or lower the driving head D. We have not thought it necessary to illustrate in detail the construction whereby the shaft B is given the desired rotation in one direction or the other, as clutch mechanism for this purpose is well known in this art. It will be sufficient, therefore, to call attention to the fact that clutch mechanism may be operated to stop the shaft B or rotate it in one direction or the other through the hand lever X, rod X', bell crank X² and rod X³, and that a rod X⁴, connected to the bell crank X² and provided with collars X⁵ and X⁶, and an arm D^x carried by the head D and adapted to engage the collars X⁵ and X⁶, are provided for automatically shifting the clutch mechanism to limit the extreme up and down movements of the head D. Weights Y, vertically movable in the columns A', are provided for counterbalancing the weight of the head D to which they are connected by cords or cables Y' running over the pulleys Y².

The driving head D comprises a disk like body portion D² having a central hub or axially extending portion D⁴. In the upper end of the latter portion, the lower end of the screw shaft B³ is secured. The body

portion D^2 is formed with a plurality of radial channels or guide ways D^3 at its outer portion, and at the inner end of each guide way D^3 is provided with a pocket D^5 open at the upper side to receive a spring E^2 , and the projecting end of a rod E' , by means of which a pivot or thrust block E , slidingly received in the corresponding guide way D^3 is normally held at the inner end of the guide way as shown in Fig. 3. Each block E is slotted to receive a corresponding driving arm F , which is pivoted to the block by a pivot pin E^2 . The walls of each guide way D^3 are slotted at top and bottom to permit the passage of the corresponding arm F . Each driving arm carries at its lower end a driving shoe F' , preferably swiveled on the arm. The upper end of each arm F is pivotally connected by a fulcrum pin G' to the outer end of a corresponding link G . The inner ends of the links G are pivotally connected by pins G^2 to ears formed on a collar or ring like member H which is slidingly mounted on the hub portion D^4 . To accommodate barrels of different sizes the links may be so formed as to permit of an adjustment of their effective lengths. As shown, this is accomplished by forming two sets of holes in the outer ends of the links in which the pins G' may be placed as desired. The member H is provided with hand trunnion pins H' , to which are pivotally connected the bifurcations I' of lever I . The latter is fulcrumed on the disk D^2 by means of a link J pivotally connected at its upper end to the lever I , and pivotally connected at its lower end to a block or bracket J' secured to the upper side of the disk D^2 . By turning the hand lever I on its fulcrum, the member H may be moved from the position shown in full lines in Fig. 3, to the position shown in dotted lines in that figure, and in full lines in Fig. 1. When the member H is moved into the dotted line position of Fig. 3, the pivot pins G^2 are lowered, and the fulcrum pins G' for the driving arms F are moved outward, thus throwing the driving shoes radially inward. Attention is directed to the fact that the movement of the lever I is preferably such that the pivot pins G^2 are thrown slightly below the pivot pins G' when the member H is moved into the dotted line position of Fig. 3, so that the thrust on the pivot pins G' , when the driving shoes F' are moved radially outward, does not tend to move the member H upward. When driving a quarter or bilge hoop, that is an intermediate hoop, on a barrel or cask, the driving arms are thrown out, as shown in Figs. 2 and 3, until the driving shoes F' are moved below the upper end of the barrel and the end hoop thereof, if the latter is in place, as is usual, although it may not yet have been driven home. After the driving shoes pass below the top of the barrel, the hand lever I is operated to move the member H down and force the fulcrums G' for the driving arms F radially outward. This brings the driving shoes into contact with the barrel, and the parts should be so proportioned that the driving shoes will engage the periphery of the barrel before the fulcrum pins G' are given their full outward movement so that when this outward movement of the fulcrum pins is completed the thrust blocks E will be moved radially outward from the inner ends of the guide ways D^3 , thus putting the springs E^2 under tension. The result of this is, of course, that the driving shoes bear resiliently against the periphery of the barrel and tend to draw it into the desired circular form. On the continued downward movement of the driving head, the driving shoes engage the quarter or bilge hoop, and force the latter into place. The resilient manner in which each driving shoe engages the barrel hoop prevents any liability of individual driving shoes jumping over the hoop being driven. The construction thus permits practically any style of hoop being driven, and we may remark that the machine shown can be used without change in driving many different styles of hoops, but is particularly designed for driving the well known spiral wire hoops. When the hoop engaged by the driving shoes has been driven far enough the handle I is operated to slide the member H upward on the hub D^4 , thus drawing the fulcrum pins G' inward and permitting the driving shoes to separate from the hoop being driven, and the periphery of the barrel sufficiently to clear the end hoop of the barrel when the head is thereafter raised. It will be observed that while the tension of the springs E' may be such that the driving shoes are urged radially inward against the barrel with any desired degree of force, when the member H is down, the latter can be shifted through the lever I by a comparatively small force. The reason for this is two-fold. The mechanism by which the member H and fulcrum pin G' is adjusted does not take the driving thrust of the driving arms. On the contrary, that is taken directly by the disk like body D^2 through the thrust blocks E . Moreover the fulcrum links G are so arranged that the leverage is a very powerful one when the fulcrum pins G' are in or near their outer positions.

In order to drive home the end hoop of the barrel either on the same downward stroke of the driving head in which the quarter or bilge hoop is driven into place, or on an independent stroke, we preferably provide the resiliently supported presser plate L as shown. This presser plate is provided with a centrally located spherical seat on its under side for a washer K' having its upper side spherical. The washer K' surrounds a bolt K provided at its lower end with adjustable

locking nuts K². The bolt K passes up through the pressure plate L into the lower end of the hub portion D⁴ where a cavity is provided receiving the enlarged head K³ of the bolt K. The bolt K thus serves to limit the movement of the pressure plate L away from the main driving head member, while at the same time the plate has capacity for adjusting its plane relative to the plane of the disk body D². Between the disk body D² and the presser plate L are arranged a plurality of presser springs L² which have their upper and lower ends received in corresponding bosses formed on the underside of the disk D² and the upper side of the presser plate L.

While in accordance with the provisions of the statutes we have herein described and illustrated the best forms of our invention now known to us, it will be apparent to those skilled in the art that many changes may be made in the form of the apparatus disclosed without departing from the spirit of our invention and that certain features may sometimes be advantageously employed without a corresponding use of other features.

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is:

1. In a hoop driving machine, a driving head formed with radial guide ways, thrust blocks received in said guide ways and slidingly movable in a radial direction therein, but restrained thereby against movement in an axial direction, driving arms pivoted one to each block, fulcrums for said arms carried by said head and radially adjustable with respect thereto, and means resiliently opposing radial movement of each of said blocks in a direction to permit the hoop engaging end of the corresponding arm to move outward.

2. In a hoop driving machine, a driving head formed with radial guide ways, thrust blocks received in said guide ways and slidingly movable in a radial direction therein, but restrained thereby against movement in an axial direction, driving arms pivoted one to each block, a member axially movable with respect to said driving head, links pivoted one to each driving arm and to said member, and means resiliently opposing radial movement of each of said blocks in a direction which permits the hoop engaging arm pivoted thereto to move outward.

3. In a hoop driving machine, a driving head formed with radial guide ways, thrust blocks received in said guide ways and slidingly movable in a radial direction therein, but restrained thereby against movement in an axial direction, driving arms pivoted one to each block, fulcrums for said arms carried by said head and radially adjustable with respect thereto, means resiliently op-

posing radial movement of each of said blocks in a direction to permit the hoop engaging end of the corresponding arm to move outward, a member mounted on said head, and axially movable with respect thereto, and links each pivotally connected at one end to a corresponding arm and at the other end to said member.

4. In a hoop driving machine, a driving head formed with radial guide ways, thrust blocks received in said guide ways and slidingly movable in a radial direction therein, but restrained thereby against movement in an axial direction, driving arms pivoted one to each block, means resiliently opposing radial movement of each of said blocks in a direction to permit the hoop engaging end of the corresponding arm to move outward, a member mounted on said head, and axially movable with respect thereto, and links each pivotally connected at one end to a corresponding arm and at the other end to said member, said member being axially movable relative to the head in each direction from the position in which the pivotal connection between the links and said arms and said member are in the said plane, and stop for positively limiting the movement of the member in one direction from said position to a short distance.

5. In a hoop driving machine, a driving head formed with an axially extending hub and radial guide ways, thrust blocks received in said guide ways and slidingly movable in a radial direction therein, but restrained thereby against movement in an axial direction, driving arms pivoted one to each block, a collar axially movable on said hub, fulcrum links each pivoted at one end to the collar and at the opposite end to a corresponding one of said driving arms, and means resiliently opposing radial movement of each of said blocks to permit the hoop engaging end of the corresponding driving arm to move outward.

6. In a hoop driving machine, a driving head formed with an axially extending hub and radial guide ways, thrust blocks received in said guide ways and slidingly movable in a radial direction therein, but restrained thereby against movement in an axial direction, driving arms pivoted one to each block, a collar axially movable on said hub, fulcrum links each pivoted at one end to the collar and at the opposite end to a corresponding one of said driving arms means resiliently opposing radial movement of each of said blocks to permit the hoop engaging end of the corresponding driving arm to move outward, and a lever fulcrumed on said blocks for moving said collar axially on said head.

7. In a hoop driving machine, a driving head formed with radial channels having registering axially extending slots formed

in the opposite walls of said channels and having spring pockets formed at the inner ends of said channels, thrust blocks slidably received in said channels, springs located in
5 said spring pockets, connections between said springs and said blocks whereby the latter are resiliently urged toward the inner ends of said channels, driving arms pivoted one to each trust block and each extending
10 through a corresponding pair of said slots, and radially adjustable fulcrums for said arms mounted on said head.

8. In a hoop driving machine, a main driving head, arms secured thereto for driving
15 an intermediate hoop of a barrel, a

presser plate for engaging an end hoop of a barrel, a bolt connecting the head and presser plate and limiting the movement of the presser plate away from the head while permitting it to approach the head and to
20 adjust its plane with respect thereto, and springs extending between the presser plate and the head and tending to separate them, said bolt and pressure plate being connected by a universal joint.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."